

10/087, 145

PAT-NO: JP409256649A

DOCUMENT-IDENTIFIER: JP 09256649 A

TITLE: DISASSEMBLING METHOD FOR REINFORCING
CONCRETE STRUCTURE

PUBN-DATE: September 30, 1997

INVENTOR-INFORMATION:

NAME

ITO, HIROSHI

SAKAGUCHI, KATSUHIKO

KIUCHI, YUKINORI

ISHII, TATSUYA

claims 1, 2, 7, 8, 9, 10

ASSIGNEE-INFORMATION:

NAME

KUMAGAI GUMI CO LTD

KK NAKABOOTEC

COUNTRY

N/A

N/A

APPL-NO: JP08061356

APPL-DATE: March 18, 1996

INT-CL (IPC): E04G023/08

ABSTRACT:

PROBLEM TO BE SOLVED: To provide an efficient disassembling method, proper to partial disassembly, for a reinforcing concrete structure by carrying a weak DC current therein.

SOLUTION: Several points on the surface of a concrete 1 in a reinforcing concrete structure are chipped, reinforcing bars 2 are exposed to the outside and the anode terminal 5 of a DC power supply 4 is connected to the exposed

portions 2a. In an partial area R on the reinforcing concrete structure to be disassembled, a cathode plate 6 is set up on the surface of the concrete 1.

The cathode plate 6 is formed by applying conductive putty 8 to a wire gauze 7.

The conductive putty 8 is formed by mixing and kneading bentonite and magnesium chloride at a weight ratio of 1:1 with 30-40% water into putty. The cathode

terminal 9 of the DC power supply 4 is connected to the gauze 7 to carry a DC current of few Wh/m² - few tens Wh/m² for few hours-one day.

COPYRIGHT: (C)1997, JPO

(19) 日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 特許出願公開番号

特開平9-256649

(43) 公開日 平成9年(1997)9月30日

(51) Int.Cl.⁸
E 0 4 G 23/08

識別記号 庁内整理番号

F I
E 0 4 G 23/08

技術表示箇所

Z

審査請求 未請求 請求項の数 3 O L (全 4 頁)

(21) 出願番号 特願平8-61356

(22) 出願日 平成8年(1996)3月18日

(71) 出願人 000001317

株式会社熊谷組
福井県福井市中央2丁目6番8号

(71) 出願人 000211891

株式会社ナカボーテック
東京都中央区新川二丁目5番2号

(72) 発明者 伊藤 洋

茨城県つくば市大字鬼ヶ窪1043 株式会社
熊谷組技術研究所内

(72) 発明者 坂口 雄彦

茨城県つくば市大字鬼ヶ窪1043 株式会社
熊谷組技術研究所内

(74) 代理人 弁理士 林 孝吉

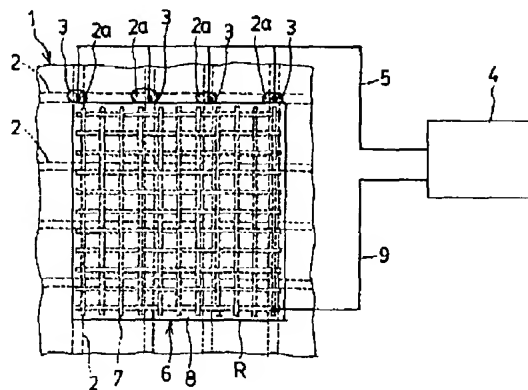
最終頁に続く

(54) 【発明の名称】 鉄筋コンクリート構造物の解体方法

(57) 【要約】

【課題】 微弱直流電流を通電して、鉄筋コンクリート構造物を解体する方法をより効率化するとともに、部分解体に適した方法を提案する。

【解決手段】 鉄筋コンクリート構造物のコンクリート1の表面数箇所をはつりして鉄筋2を露出させ、その露出部2aに直流電源装置4の陽極端子5を接続する。また、解体の対象となる鉄筋コンクリート構造物の一部領域Rについて、そのコンクリート1表面に陰極平板6を設置する。該陰極平板6は、金網7に導電性パテ状物8を塗布したものであり、且つ、導電性パテ状物8は重量比1対1のベントナイトと塩化マグネシウムとを水比30～40%にて練り混ぜ、パテ状にしたものである。そして、前記金網7に前記直流電源装置4の陰極端子9を接続して、数Wh/m²から数十Wh/m²程度の直流電気を数時間から1日程度通電する。



1

【特許請求の範囲】

【請求項1】 鉄筋に陽極を接続し、コンクリート表面に陰極を接続して直流電流を通電した後、鉄筋コンクリート構造物を解体する方法に於て、酸化促進剤を混入した陰極平板をコンクリート表面の解体する領域に被蔽することにより、前記陰極を構成したことを特徴とする鉄筋コンクリート構造物の解体方法。

【請求項2】 鉄筋に陽極を接続し、コンクリート表面に陰極を接続して直流電流を通電した後、鉄筋コンクリート構造物を解体する方法に於て、酸化促進剤を混入した高吸水性の陰極平板をコンクリート表面の解体する領域に被蔽することにより、前記陰極を構成したことを特徴とする鉄筋コンクリート構造物の解体方法。

【請求項3】 ベントナイトと、前記酸化促進剤として塩化マグネシウムとを、水にて練り混ぜた導電性パテ状物を金網に塗布することにより、前記陰極平板を構成した請求項1又は2記載の鉄筋コンクリート構造物の解体方法。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】この発明は、鉄筋コンクリート構造物を解体する方法に関するものであり、特に、鉄筋とコンクリート間に微弱電流を通電して鉄筋を酸化した後、構造物の全体又は一部を解体する方法に関するものである。

【0002】

【従来の技術】従来の此種鉄筋コンクリート構造物の解体方法として、予め塩化ナトリウム水溶液又は塩化カルシウム水溶液を鉄筋コンクリートに含浸した上で、鉄筋に陽極を接続し、更に、コンクリート表面に層状金属を設置して之に陰極を接続し、両電極間に数mA/cm²程度の微弱電流を通電した後、解体する方法が知られている（特開昭52-101834）。

【0003】この方法によれば、鉄筋が電流により酸化して膨張し、該鉄筋とコンクリートとが剥離するとともに、コンクリート内部に亀裂が生じるため、コンクリートを粉砕し易くなる。また、予め塩化ナトリウム水溶液又は塩化カルシウム水溶液を鉄筋コンクリートに含浸して置くのは、鉄筋の酸化を促進するためである。

【0004】

【発明が解決しようとする課題】塩化ナトリウム水溶液又は塩化カルシウム水溶液を予め鉄筋コンクリートに含浸する手段として、前掲の公知の文献によれば、これら水溶液を含浸した布、綿等をコンクリート表面に7日程度添付しておく方法、又はコンクリートに棒状の孔をあけ、この孔に前記布、綿を挿入し若しくは水溶液を注入しておく方法が提案されている。

【0005】しかし、このような作業は煩雑で日数もかかる。また、構造物の全体ではなく一部分のみを解体する場合に、解体しない部分まで劣化してしまうおそれが

2

ある。更に、酸化促進剤としてより効果的な材料が存在することも考えられる。

【0006】そこで、より効率的に鉄筋コンクリート構造物を解体するために解決すべき技術的課題が生じてくるのであり、本発明は該課題を解決することを目的とする。

【0007】

【課題を解決するための手段】本発明は上記課題を解決するために提案されたものであり、鉄筋に陽極を接続し、コンクリート表面に陰極を接続して直流電流を通電した後、鉄筋コンクリート構造物を解体する方法に於て、酸化促進剤を混入した特に高吸水性の陰極平板をコンクリート表面の解体する領域に被蔽することにより、前記陰極を構成した鉄筋コンクリート構造物の解体方法、及びベントナイトと、前記酸化促進剤として塩化マグネシウムとを、水にて練り混ぜた導電性パテ状物を金網に塗布することにより、前記陰極平板を構成した鉄筋コンクリート構造物の解体方法を提供するものである。

【0008】ここで、前記陰極平板について、特に高吸水性のものを可とする理由は、高吸水性である程、酸化促進剤が電解し易く、該陰極平板とコンクリート間の界面抵抗が小さくなって、導電性を高めることができるからである。従って、高吸水性の下限は、混入する酸化促進剤を十分に電解することができる程度といえることができる。

【0009】また、ベントナイトは保水性に富み、高吸水性の条件を十分に満たしている。

【0010】

【発明の実施の形態】以下、本発明の実施の形態を図1及び図2に従って詳述する。図に於いて1は鉄筋コンクリート構造物のコンクリートであり、該コンクリート1内には補強筋として鉄筋2が縦横に埋設されている。この鉄筋コンクリート構造物の一部領域Rを解体する際は、先ず該一部領域R周辺数箇所をハンドブレイカ等にてはつりし（はつり部3、3…）、このはつり部3、3…から露出した鉄筋2a、2a…に直流電源装置4の陽極端子5を接続する。ここで、該陽極端子5の先端はマグネットになっているため、容易に接続することができる。

【0011】そして、該一部領域R表面に陰極平板6を設置して、該一部領域Rを被蔽する。この陰極平板6は金網7に導電性パテ状物8を塗布したものであり、その設置方法は前記一部領域R表面に金網7を張り付け、その上から導電性パテ状物8を塗布しても良く、或いは予め金網7に導電性パテ状物8を塗布しておき、それを前記一部領域R表面に張り付けても良い。

【0012】また、前記導電性パテ状物8は、重量比が1対1のベントナイトと塩化マグネシウムとを水比30～40%で練り混ぜ、パテ状に形成したものである。尚、前記陰極平板として、高吸水性不織布に塩化マグネ

シウム等の酸化促進剤を含浸したもの等を用いても良い。

【0013】而して、前記陰極平板6の金網7の一端に前記直流電源装置4の陰極端子9を接続し、前記鉄筋2とコンクリート1表面との間に低電圧・低電流の直流電気を流す。この通電時間は数時間から1日程度、通電量は数Wh/m²から数十Wh/m²程度で十分である。そして、この通電により前記一部領域Rについて以下のような現象が表われる。

【0014】① 陰極平板6の導電性パテ状物8中の塩化マグネシウムが電解して、塩素イオンとマグネシウムイオンとなる。この時、前記導電性パテ状物8中のベントナイトは保水性に優れているので、これにより陰極平板6とコンクリート1との間の界面抵抗が小さくなって導電性が高まる。

【0015】② コンクリート1中のカルシウムイオンが溶出して、陰極平板6方向へ移動し、コンクリート1の強度が低下する。

③ 鉄筋2中の鉄が電解して溶出し、これにより鉄筋断面積が減少してコンクリート1との付着強度が低下する。

【0016】④ ③により溶出した鉄イオンとコンクリート1中の水が反応して、鉄筋2とコンクリート1との境界面に腐食生成物が発生し、且つ、膨張する。

⑤ ①により生成した塩素イオンはコンクリート1中に拡散しながら、該コンクリート1中の水酸化ナトリウムと反応して、該コンクリート1の硬化体を多孔化させる。

【0017】⑥ また、塩素イオンは硫酸イオン等と比べるとコンクリート1中を拡散し易く、より深く侵入していく。そして、鉄筋2へ到達すると該鉄筋2表面の不導体被膜を破壊する。これにより、④の腐食が促進されて、コンクリート1にひび割れが発生する。

【0018】⑦ ⑤により多孔化したコンクリート1の硬化体に、②により生成したマグネシウムイオンが侵入してコンクリート1を水溶性にする。即ち、侵入したマグネシウムイオンはカルシウムシリケートハイドレートと反応して、結合力のないマグネシウムシリケートハイドレートを生成する。これにより、コンクリート1の圧縮強度が低下する。(実験によれば、初期強度の50～60%にまで低下した。)

斯くして、陰極平板6を剥離すれば、鉄筋コンクリート構造物の一部領域Rを極めて容易に解体することができる。

【0019】尚、本発明は、本発明の精神を逸脱しない限り種々の改変を為すことができ、そして、本発明が該改変されたものに及ぶことは当然である。

【0020】

【発明の効果】以上説明したように、本発明は陰極平板に酸化促進剤が混入されているので、作業が簡素化されるだけでなく、陰極平板を設置した部分のみを劣化させることができ、解体しない部分まで劣化させるおそれがない。従って、鉄筋コンクリート構造物の部分解体に適しており、例えば、ビルの屋根スラブや側壁等の補修・改築、或いは地中連続壁立坑のシールド機発進又は到達孔の解体等に適用すれば、作業効率が大幅に向上する。

【0021】また、保水性に優れたベントナイトと、電解質となる塩化マグネシウムとを水にて練り混ぜる等して、陰極平板を高吸水性にすれば、陰極平板とコンクリート間の界面抵抗が小さくなり、導電性を高めることができる。

【0022】更に、酸化促進剤として塩化マグネシウムを用いれば、拡散性に富む塩素イオンのコンクリート硬化体多孔化作用及び鉄筋表面の不導体被膜破壊作用に併せて、マグネシウムイオンが多孔化したコンクリート硬化体に侵入して、コンクリートを水溶性化するので、塩化ナトリウムや塩化カルシウムを用いた場合よりも、コンクリート圧縮強度を可及的に低下させることができる。

【図面の簡単な説明】

【図1】本発明の実施の形態を示す平面図。

【図2】本発明の実施の形態を示す側面断面図。

【符号の説明】

- | | |
|---|---------|
| 1 | コンクリート |
| 2 | 鉄筋 |
| 4 | 直流電源装置 |
| 5 | 陽極端子 |
| 6 | 陰極平板 |
| 7 | 金網 |
| 8 | 導電性パテ状物 |
| 9 | 陰極端子 |

* NOTICES *

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] The overhaul approach of the reinforced concrete structure characterized by constituting said cathode by -ed **(ing) the cathode plate which mixed the pro oxidant in the approach of disassembling the reinforced concrete structure, to the field which a concrete front face disassembles after connecting an anode plate to reinforcement, connecting cathode to a concrete front face and energizing a direct current.

[Claim 2] The overhaul approach of the reinforced concrete structure characterized by constituting said cathode by -ed **(ing) the cathode plate of the high absorptivity which mixed the pro oxidant in the approach of disassembling the reinforced concrete structure, to the field which a concrete front face disassembles after connecting an anode plate to reinforcement, connecting cathode to a concrete front face and energizing a direct current.

[Claim 3] The overhaul approach of a bentonite and the reinforced concrete structure according to claim 1 or 2 which constituted said cathode plate by applying to a wire gauze the conductive putty-like object which kneaded the magnesium chloride with water as said pro oxidant.

[Translation done.]

* NOTICES *

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] After this invention energizes a feeble current and oxidizes reinforcement between reinforcement and concrete especially about the approach of disassembling the reinforced concrete structure, it relates to the approach of disassembling the whole structure or a part.

[0002]

[Description of the Prior Art] As the overhaul approach of the conventional **** reinforced concrete structure, after sinking a sodium chloride water solution or a calcium chloride water solution into a reinforced concrete beforehand, an anode plate is connected to reinforcement, further, a stratified metal is installed in a concrete front face, cathode is connected to this, and it is 2 several mA/cm between two electrodes. After energizing the feeble current of extent, the approach of disassembling is learned (JP, 52-101834, A).

[0003] Since a crack arises inside concrete while according to this approach reinforcement oxidizes according to a current, and expands and this reinforcement and concrete exfoliate, it becomes easy to grind concrete. Moreover, a sodium chloride water solution or a calcium chloride water solution is beforehand sunk in and put on a reinforced concrete for promoting oxidation of reinforcement. *electrolyte*

[0004]

[Problem(s) to be Solved by the Invention] According to the well-known reference shown above, as a means to sink beforehand a sodium chloride water solution or a calcium chloride water solution into a reinforced concrete, the method of opening a rod-like hole in the method of attaching the cloth which sank in these water solutions, cotton, etc. to the concrete front face about seven days, or concrete, and inserting said cloth and cotton in this hole, or pouring in the water solution is proposed.

[0005] However, such an activity is complicated and also requires days. Moreover, when disassembling only the part instead of the whole structure, there is a possibility of deteriorating to the part which is not disassembled. Furthermore, it is also considered that the more effective ingredient as a pro oxidant exists.

[0006] Then, the technical technical problem which should be solved in order to disassemble the reinforced concrete structure more efficiently arises, and this invention aims at solving this technical problem.

[0007]

[Means for Solving the Problem] This invention is proposed in order to solve the above-mentioned technical problem, and it connects an anode plate to reinforcement. By -ed ** (ing) the cathode plate of high absorptivity especially in the approach of disassembling the reinforced concrete structure, to the field which mixed the pro oxidant and which a concrete front face disassembles, after connecting cathode to a concrete front face and energizing a direct current By applying to a wire gauze the overhaul approach of the reinforced-concrete-construction object which constituted said cathode and a bentonite, and the conductive putty-like object that kneaded the magnesium chloride with water as said pro oxidant The overhaul approach of the reinforced concrete structure which constituted said cathode plate is

Prior Art

offered.

[0008] It is because a pro oxidant tends to electrolyze the reason for making especially the thing of high absorptivity good, so that it is high absorptivity, the interfacial resistance between this cathode plate and concrete becomes small and conductivity can be raised about said cathode plate here. Therefore, the minimum of high absorptivity can be called extent which can fully electrolyze the pro oxidant to mix.

[0009] Moreover, Ben Knight is rich in water retention, and fully fulfills the conditions of high absorptivity.

[0010]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained in full detail according to drawing 1 and drawing 2. In drawing, 1 is the concrete of the reinforced concrete structure and reinforcement 2 is laid underground in all directions as a reinforcement in this concrete 1. a part of this reinforced concrete structure -- the time of disassembling Field R -- first -- this -- a part -- several field R circumferences -- a hand breaker etc. -- if -- it hangs and carries out (hanging the section 3, 3 --), and the anode terminal 5 of DC-power-supply equipment 4 is connected to reinforcement 2a exposed from this trimming section 3 and 3 --, and 2a--. Here, since the head of this anode terminal 5 is a magnet, it is easily connectable.

[0011] and -- this -- a part -- a field R front face -- the cathode plate 6 -- installing -- this -- a part -- Field R is -ed ** (ed). The conductive putty-like object 8 may be applied to a wire gauze 7, that installation approach may stick a wire gauze 7 on a forward Norikazu section field R front face, and this cathode plate 6 may apply the conductive putty-like object 8 from on that, or applies the conductive putty-like object 8 to the wire gauze 7 beforehand, and may stick it on a forward Norikazu section field R front face.

[0012] moreover, said conductive putty-like object 8 -- a weight ratio -- the bentonite and magnesium chloride of 1 to 1 -- a water ratio -- it kneads at 30 - 40%, and forms in the shape of putty. In addition, what sank in pro oxidants, such as a magnesium chloride, may be used for a high absorptivity nonwoven fabric as said cathode plate.

[0013] It **, the cathode terminal 9 of said DC-power-supply equipment 4 is connected to the end of the wire gauze 7 of said cathode plate 6, and the direct-current electrical and electric equipment of a low battery and low current is passed between said reinforcement 2 and concrete 1 front face. Several Wh/m² to about two dozens Wh/m of this resistance welding time is enough as the amount of energization 1st [about] day from several hours. And the following phenomena appear about the forward Norikazu section field R by this energization.

[0014] ** The magnesium chloride in the conductive putty-like object 8 of the cathode plate 6 electrolyzes, and it becomes a chloride ion and magnesium ion. Since the bentonite in said conductive putty-like object 8 is excellent in water retention at this time, the interfacial resistance between the cathode plate 6 and concrete 1 becomes small by this, and conductivity increases.

[0015] ** The calcium ion in concrete 1 is eluted, move in the cathode plate 6 direction, and the reinforcement of concrete 1 falls.

** The iron in reinforcement 2 is electrolyzed and eluted, the reinforcement cross section decreases by this, and bond strength with concrete 1 falls.

[0016] The water in the iron ion eluted by ** ** and concrete 1 reacts, and a corrosion product generates and expands to the interface of reinforcement 2 and concrete 1.

Being spread in concrete 1, the chloride ion generated by ** ** reacts with the sodium hydroxide in this concrete 1, and makes the hardening object of this concrete 1 porosity-ize.

[0017] ** A chloride ion tends to diffuse the inside of concrete 1 compared with sulfate ion etc., and invades more deeply again. And if it reaches to reinforcement 2, the nonconductor coat of this reinforcement 2 front face will be destroyed. Thereby, the corrosion of ** is promoted and a crack occurs to concrete 1.

[0018] The magnesium ion generated by ** invades into the hardening object of the concrete 1 porosity-ized by ** **, and concrete 1 is made it at water solubility. That is, the magnesium ion which invaded reacts with a calcium silicate hydrate, and generates a magnesium silicate hydrate without bonding

strength. Thereby, the compressive strength of concrete 1 falls. (According to the experiment, it fell to 50 - 60% of early age strength.)

if the cathode plate 6 is exfoliated thus -- some reinforced concrete structures -- Field R can be disassembled very easily.

[0019] In addition, this invention can succeed in various alterations, unless it deviates from the pneuma of this invention, and it is natural to attain to that by which this invention was this changed.

[0020]

[Effect of the Invention] As explained above, there is no possibility of degrading this invention to the part which only the part which installed the cathode plate can be degraded an activity is not only simplified, but, and is not disassembled since the pro oxidant is mixed in the cathode plate. Therefore, if it is suitable for the partial-solution object of a reinforced-concrete-construction object, for example, applies to the overhaul of remedy and reconstruction of the roof slab of a building, a side attachment wall, etc., shielding machine start of a subterranean continuation wall shaft, or an attainment hole etc., working efficiency will improve substantially.

[0021] Moreover, if it carries out kneading the bentonite excellent in water retention, and the magnesium chloride used as an electrolyte with water etc. and a cathode plate is made into high absorptivity, the interfacial resistance between a cathode plate and concrete becomes small, and can raise conductivity.

[0022] Furthermore, if a magnesium chloride is used as a pro oxidant, since it will combine with a concrete hardening object porosity-ized operation of the chloride ion which is rich in diffusibility, and a nonconductor coat destructive operation of a reinforcement front face, it will invade into the concrete hardening object which magnesium ion porosity-ized and concrete will be water-solubility-ized, concrete compressive strength can be reduced as much as possible rather than the case where a sodium chloride and a calcium chloride are used.

[Translation done.]

* NOTICES *

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

PRIOR ART

[Description of the Prior Art] As the overhaul approach of the conventional **** reinforced concrete structure, after sinking a sodium chloride water solution or a calcium chloride water solution into a reinforced concrete beforehand, an anode plate is connected to reinforcement, further, a stratified metal is installed in a concrete front face, cathode is connected to this, and it is 2 several mA/cm between two electrodes. After energizing the feeble current of extent, the approach of disassembling is learned (JP, 52-101834, A).

[0003] Since a crack arises inside concrete while according to this approach reinforcement oxidizes according to a current, and expands and this reinforcement and concrete exfoliate, it becomes easy to grind concrete. Moreover, a sodium chloride water solution or a calcium chloride water solution is beforehand sunk in and put on a reinforced concrete for promoting oxidation of reinforcement.

[Translation done.]

* NOTICES *

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

EFFECT OF THE INVENTION

[Effect of the Invention] As explained above, there is no possibility of degrading this invention to the part which only the part which installed the cathode plate can be degraded an activity is not only simplified, but, and is not disassembled since the pro oxidant is mixed in the cathode plate. Therefore, if it is suitable for the partial-solution object of a reinforced-concrete-construction object, for example, applies to the overhaul of remedy and reconstruction of the roof slab of a building, a side attachment wall, etc., shielding machine start of a subterranean continuation wall shaft, or an attainment hole etc., working efficiency will improve substantially.

[0021] Moreover, if it carries out kneading the bentonite excellent in water retention, and the magnesium chloride used as an electrolyte with water etc. and a cathode plate is made into high absorptivity, the interfacial resistance between a cathode plate and concrete becomes small, and can raise conductivity.

[0022] Furthermore, if a magnesium chloride is used as a pro oxidant, since it will combine with a concrete hardening object porosity-ized operation of the chloride ion which is rich in diffusibility, and a nonconductor coat destructive operation of a reinforcement front face, it will invade into the concrete hardening object which magnesium ion porosity-ized and concrete will be water-solubility-ized, concrete compressive strength can be reduced as much as possible rather than the case where a sodium chloride and a calcium chloride are used.

[Translation done.]

* NOTICES *

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] According to the well-known reference shown above, as a means to sink beforehand a sodium chloride water solution or a calcium chloride water solution into a reinforced concrete, the method of opening a rod-like hole in the method of attaching the cloth which sank in these water solutions, cotton, etc. to the concrete front face about seven days, or concrete, and inserting said cloth and cotton in this hole, or pouring in the water solution is proposed.

[0005] However, such an activity is complicated and also requires days. Moreover, when disassembling only the part instead of the whole structure, there is a possibility of deteriorating to the part which is not disassembled. Furthermore, it is also considered that the more effective ingredient as a pro oxidant exists.

[0006] Then, the technical technical problem which should be solved in order to disassemble the reinforced concrete structure more efficiently arises, and this invention aims at solving this technical problem.

[Translation done.]

* NOTICES *

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

MEANS

[Means for Solving the Problem] This invention is proposed in order to solve the above-mentioned technical problem, and it connects an anode plate to reinforcement. By -ed **(ing) the cathode plate of high absorptivity especially in the approach of disassembling the reinforced concrete structure, to the field which mixed the pro oxidant and which a concrete front face disassembles, after connecting cathode to a concrete front face and energizing a direct current By applying to a wire gauze the overhaul approach of the reinforced-concrete-construction object which constituted said cathode and a bentonite, and the conductive putty-like object that kneaded the magnesium chloride with water as said pro oxidant The overhaul approach of the reinforced concrete structure which constituted said cathode plate is offered.

[0008] It is because a pro oxidant tends to electrolyze the reason for making especially the thing of high absorptivity good, so that it is high absorptivity, the interfacial resistance between this cathode plate and concrete becomes small and conductivity can be raised about said cathode plate here. Therefore, the minimum of high absorptivity can be called extent which can fully electrolyze the pro oxidant to mix.

[0009] Moreover, Ben Knight is rich in water retention, and fully fulfills the conditions of high absorptivity.

[0010]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained in full detail according to drawing 1 and drawing 2. In drawing, 1 is the concrete of the reinforced concrete structure and reinforcement 2 is laid underground in all directions as a reinforcement in this concrete 1. a part of this reinforced concrete structure -- the time of disassembling Field R -- first -- this -- a part -- several field R circumferences -- a hand breaker etc. -- if -- it hangs and carries out (hanging the section 3, 3 --), and the anode terminal 5 of DC-power-supply equipment 4 is connected to reinforcement 2a exposed from this trimming section 3 and 3 --, and 2a--. Here, since the head of this anode terminal 5 is a magnet, it is easily connectable.

[0011] and -- this -- a part -- a field R front face -- the cathode plate 6 -- installing -- this -- a part -- Field R is -ed **(ed). The conductive putty-like object 8 may be applied to a wire gauze 7, that installation approach may stick a wire gauze 7 on a forward Norikazu section field R front face, and this cathode plate 6 may apply the conductive putty-like object 8 from on that, or applies the conductive putty-like object 8 to the wire gauze 7 beforehand, and may stick it on a forward Norikazu section field R front face.

[0012] moreover, said conductive putty-like object 8 -- a weight ratio -- the bentonite and magnesium chloride of 1 to 1 -- a water ratio -- it kneads at 30 - 40%, and forms in the shape of putty. In addition, what sank in pro oxidants, such as a magnesium chloride, may be used for a high absorptivity nonwoven fabric as said cathode plate.

[0013] It **, the cathode terminal 9 of said DC-power-supply equipment 4 is connected to the end of the wire gauze 7 of said cathode plate 6, and the direct-current electrical and electric equipment of a low battery and low current is passed between said reinforcement 2 and concrete 1 front face. Several Wh/m2 to about two dozens Wh/m of this resistance welding time is enough as the amount of

energization 1st [about] day from several hours. And the following phenomena appear about the forward Norikazu section field R by this energization.

[0014] ** The magnesium chloride in the conductive putty-like object 8 of the cathode plate 6 electrolyzes, and it becomes a chloride ion and magnesium ion. Since the bentonite in said conductive putty-like object 8 is excellent in water retention at this time, the interfacial resistance between the cathode plate 6 and concrete 1 becomes small by this, and conductivity increases.

[0015] ** The calcium ion in concrete 1 is eluted, move in the cathode plate 6 direction, and the reinforcement of concrete 1 falls.

** The iron in reinforcement 2 is electrolyzed and eluted, the reinforcement cross section decreases by this, and bond strength with concrete 1 falls.

[0016] The water in the iron ion eluted by ** ** and concrete 1 reacts, and a corrosion product generates and expands to the interface of reinforcement 2 and concrete 1.

Being spread in concrete 1, the chloride ion generated by ** ** reacts with the sodium hydroxide in this concrete 1, and makes the hardening object of this concrete 1 porosity-ize.

[0017] ** A chloride ion tends to diffuse the inside of concrete 1 compared with sulfate ion etc., and invades more deeply again. And if it reaches to reinforcement 2, the nonconductor coat of this reinforcement 2 front face will be destroyed. Thereby, the corrosion of ** is promoted and a crack occurs to concrete 1.

[0018] The magnesium ion generated by ** invades into the hardening object of the concrete 1 porosity-ized by ** **, and concrete 1 is made it at water solubility. That is, the magnesium ion which invaded reacts with a calcium silicate hydrate, and generates a magnesium silicate hydrate without bonding strength. Thereby, the compressive strength of concrete 1 falls. (According to the experiment, it fell to 50 - 60% of early age strength.)

if the cathode plate 6 is exfoliated thus -- some reinforced concrete structures -- Field R can be disassembled very easily.

[0019] In addition, this invention can succeed in various alterations, unless it deviates from the pneuma of this invention, and it is natural to attain to that by which this invention was this changed.

[Translation done.]

* NOTICES *

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The top view showing the gestalt of operation of this invention.

[Drawing 2] The side-face sectional view showing the gestalt of operation of this invention.

[Description of Notations]

1 Concrete

2 Reinforcement

4 DC-Power-Supply Equipment

5 Anode Terminal

6 Cathode Plate

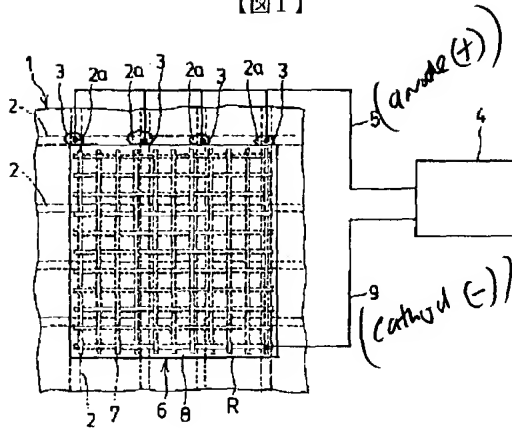
7 Wire Gauze

8 Conductive Putty-like Object

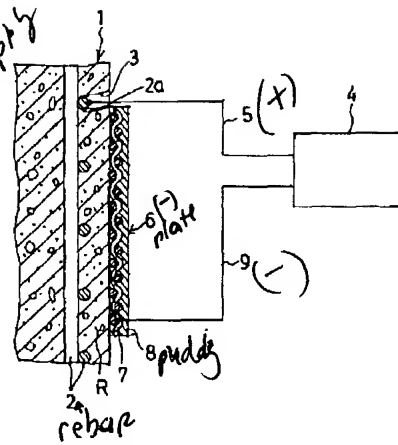
9 Cathode Terminal

[Translation done.]

【図1】



【図2】



フロントページの続き

(72)発明者 木内 幸則
埼玉県上尾市中新井417-16 株式会社ナ
カボーテック技術開発研究所内

(72)発明者 石井 辰弥
埼玉県上尾市中新井417-16 株式会社ナ
カボーテック技術開発研究所内